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2 We claim:

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1 1. A method of electroforming tissue comprising:
2 creating stress in the tissue; and
3 causing a current to flow in the tissue while the created stress is present to
4 change shape of the tissue or material parameters of the tissue.

1 2. The method of claim 1 where causing a current to flow in the tissue comprises
2 causing a direct current of a predetermined polarity to flow in the tissue to mediate the
3 tissue.

1 3. The method of claim 1 where creating stress in the tissue comprises
2 mechanically applying force to the tissue to create external stresses applied to the
3 tissue.

1 4. The method of claim 1 where creating stress in the tissue comprises changing
2 material parameters of the tissue to create internal stresses in the tissue.

1 5. The method of claim 4 where changing material parameters of the tissue
2 comprises causing a current to flow in the tissue.

1 6. The method of claim 1 further comprising monitoring the stresses in the tissue
2 and controlling the current flowing in the tissue according to the stresses therein.

1 7. The method of claim 6 where monitoring the stresses in the tissue comprises
2 monitoring impedance of the tissue.

1 8. The method of claim 6 where monitoring the stresses in the tissue comprises
2 monitoring optical properties of the tissue.

1 9. The method of claim 6 where monitoring the stresses in the tissue comprises
2 monitoring pH of the tissue.

1 10. The method of claim 6 where monitoring the stresses in the tissue comprises
2 monitoring gas formation in the tissue.

1 11. The method of claim 6 where monitoring the stresses in the tissue comprises
2 monitoring acoustic properties of the tissue.

1 12. The method of claim 6 where monitoring the stresses in the tissue comprises
2 monitoring color of the tissue as caused by a chemical dye disposed therein.

1 13. The method of claim 6 where monitoring the stresses in the tissue comprises
2 monitoring color of the tissue as caused by electroplating a material thereon.

1 14. The method of claim 1 where causing a current to flow in the tissue comprises
2 applying a current of predetermined polarity to obtain a predetermined bioeffect.

1 15. The method of claim 14 where applying a current of predetermined polarity to
2 obtain a predetermined bioeffect comprises applying pulses of current of the same
3 polarity to form a DC pulse train.

1 16. The method of claim 14 where applying a current of predetermined polarity to
2 obtain a predetermined bioeffect comprises applying a first sequence of pulses of
3 current of the same polarity and applying a second sequence of pulses of current of the
4 opposite polarity to form a complex DC pulse train

5 17. The method of claim 16 where applying the first and second sequence of pluses
6 provides a net charge cancellation when integrated over an application time.

1 18. The method of claim 14 where applying a voltage of predetermined polarity to
2 obtain a predetermined bioeffect comprises flowing current from a positive electrode to
3 obtain tissue compression in the proximity of the positive electrode.

1 19. The method of claim 14 where applying a voltage of predetermined polarity to
2 obtain a predetermined bioeffect comprises flowing current from a negative electrode to
3 obtain tissue lengthening in the proximity of the negative electrode.

1 20. The method of claim 1 where creating stress in the tissue comprises creating
2 tension in the tissue.

1 21. The method of claim 1 where creating stress in the tissue comprises creating
2 compression in the tissue.

1 22. The method of claim 1 where creating stress in the tissue comprises creating
2 shear stress in the tissue.

1 23. The method of claim 1 where causing a current to flow in the tissue comprises
2 applying a DC voltage for a predetermined application time across two paired
3 conductive elements in contact with the tissue.

1 24. The method of claim 23 where applying a DC voltage for a predetermined
2 application time across two paired conductive elements comprises placing a solid
3 conductive element in contact with the tissue, including solid conductive elements
4 composed of metals or conductive polymers.

1 25. The method of claim 23 where applying a DC voltage for a predetermined
2 application time across two paired conductive elements comprises placing a conductive
3 gel or solution in contact with the tissue.

1 26. The method of claim 23 where applying a DC voltage for a predetermined
2 application time across two paired conductive elements comprises penetrating the
3 tissue with at least one conductive needle as providing contact with one of the pair of
4 electrodes.

1 27. The method of claim 23 where applying a DC voltage for a predetermined
2 application time across two paired conductive elements comprises contacting the tissue
3 with an array of point contacts or penetrating needles.

1 28. The method of claim 1 where creating stress in the tissue and causing a current
2 to flow in the tissue comprises contacting the tissue with a pair of curved electrodes.

1 29. The method of claim 28 where contacting the tissue with a pair of curved
2 electrodes comprises contacting the tissue with a sharply angled electrode.

1 30. The method of claim 28 where contacting the tissue with a pair of curved
2 electrodes comprises contacting the tissue with a smoothly angled electrode.

1 31. A method of electroforming cartilage comprising:
2 mechanically inducing a predetermined desired shape of the cartilage;
3 applying electrical energy to cartilage to cause electrolytic conduction of current
4 through the cartilage for a predetermined application time while mechanically
5 maintaining the predetermined desired shape; and
6 ceasing the application of electrolytic conduction of current through the cartilage
7 and freeing the cartilage from mechanical shaping.

1 32. The method of claim 31 where electrolytic conduction of current is limited to
2 provide a substantially nonthermal method.

1 33. The method of claim 31 where applying electrical energy to cartilage causes
2 cartilage shaping to occur through electroplating, electrophoresis, protein denaturation,
3 action- local mineralization, water flow, transitions of bound to free water, electrolysis of
4 water, pH change or combinations thereof.

1 34. The method of claim 31 where applying electrical energy to cartilage is by means
2 of a DC voltage being applied across a pair of electrodes, which causes cartilage
3 shaping to occur through molecular dissociation of the components of the cartilage in
4 the vicinity of the electrodes which in turn induces volumetric molecular reorganization
5 within the tissue.

1 35. An apparatus of electroforming tissue comprising:
2 means for creating stress in the tissue; and
3 means for causing a current to flow in the tissue while the created stress is
4 present to change shape of the tissue or material parameters of the tissue.

1 36. The apparatus of claim 35 where the means for causing a current to flow in the
2 tissue comprises means for causing a direct current of a predetermined polarity to flow
3 in the tissue to mediate the tissue.

1 37. The apparatus of claim 35 where the means for creating stress in the tissue
2 comprises means for mechanically applying force to the tissue to create external
3 stresses applied to the tissue.

1 38. The apparatus of claim 35 where the means for creating stress in the tissue
2 comprises means for changing material parameters of the tissue to create internal
3 stresses in the tissue.

1 39. The apparatus of claim 38 where the means for changing material parameters of
2 the tissue comprises means for causing a current to flow in the tissue.

1 40. The apparatus of claim 35 further means for comprising monitoring the stresses
2 in the tissue and means for controlling the current flowing in the tissue according to the
3 stresses therein.

1 41. The apparatus of claim 40 where the means for monitoring the stresses in the
2 tissue comprises means for monitoring impedance of the tissue.

1 42. The apparatus of claim 40 where the means for monitoring the stresses in the
2 tissue comprises monitoring optical properties of the tissue.

1 43. The apparatus of claim 40 where the means for monitoring the stresses in the
2 tissue comprises means for monitoring pH of the tissue.

1 44. The apparatus of claim 40 where the means for monitoring the stresses in the
2 tissue comprises means for monitoring gas formation in the tissue.

1 45. The apparatus of claim 40 where the means for monitoring the stresses in the
2 tissue comprises means for monitoring acoustic properties of the tissue.

1 46. The apparatus of claim 40 where the means for monitoring the stresses in the
2 tissue comprises means for monitoring color of the tissue as caused by a chemical dye
3 disposed therein.

1 47. The apparatus of claim 40 where the means for monitoring the stresses in the
2 tissue comprises means for monitoring color of the tissue as caused by electroplating a
3 material thereon.

1 48. The apparatus of claim 35 where the means for causing a current to flow in the
2 tissue comprises means for applying a voltage of predetermined polarity to obtain a
3 predetermined bioeffect.

1 49. The apparatus of claim 48 where the means for applying a current of
2 predetermined polarity to obtain a predetermined bioeffect comprises means for
3 applying voltage pulses of the same polarity to form a DC pulse train.

1 50. The apparatus of claim 49 where the means for applying a voltage of
2 predetermined polarity to obtain a predetermined bioeffect comprises means for
3 applying a first sequence of voltage pulses of the same polarity and means for applying
4 a second sequence of voltage pulses of the opposite polarity to form a complex DC
5 pulse train.

1 51. The apparatus of claim 50 where the means for applying a first sequence and
2 means for applying a second sequence of voltage pulses provide a net charge
3 cancellation when integrated over an application time.

1 52. The apparatus of claim 49 where the means for applying a voltage of
2 predetermined polarity to obtain a predetermined bioeffect comprises means for flowing
3 current from a positive electrode to obtain tissue compression in the proximity of the
4 positive electrode.

1 53. The apparatus of claim 49 where the means for applying a voltage of
2 predetermined polarity to obtain a predetermined bioeffect comprises means for flowing
3 current from a negative electrode to obtain tissue lengthening in the proximity of the
4 negative electrode.

1 54. The apparatus of claim 35 where the means for creating stress in the tissue
2 comprises creating means for tension, compression, shear or combinations thereof in
3 the tissue.

1 55. The apparatus of claim 35 where the means for causing a current to flow in the
2 tissue comprises means for applying a DC voltage for a predetermined application time
3 across two paired conductive elements in contact with the tissue.

1 56. The apparatus of claim 55 where the means for applying a DC voltage for a
2 predetermined application time across two paired conductive elements comprises
3 means for placing a solid conductive element in contact with the tissue, including solid
4 conductive elements composed of metals or conductive polymers.

1 57. The apparatus of claim 55 where the means for applying a DC voltage for a
2 predetermined application time across two paired conductive elements comprises
3 means for placing a conductive gel or solution in contact with the tissue.

1 58. The apparatus of claim 55 where the means for applying a DC voltage for a
2 predetermined application time across two paired conductive elements comprises
3 means for penetrating the tissue with at least one conductive needle as providing
4 contact with one of the pair of electrodes.

1 59. The apparatus of claim 55 where the means for applying a DC voltage for a
2 predetermined application time across two paired conductive elements comprises
3 means for contacting the tissue with an array of point contacts.

1 60. The apparatus of claim 35 where the means for creating stress in the tissue and
2 the means for causing a current to flow in the tissue comprises means for contacting the
3 tissue with a pair of curved electrodes.

1 61. The apparatus of claim 60 where the means for contacting the tissue with a pair
2 of curved electrodes comprises means for contacting the tissue with a sharply angled
3 electrode.

1 62. The apparatus of claim 60 where the means for contacting the tissue with a pair
2 of curved electrodes comprises means for contacting the tissue with a smoothly angled
3 electrode.

1 63. An apparatus of electroforming cartilage comprising:
2 means for mechanically inducing a predetermined desired shape of the cartilage;
3 means for applying electrical energy to cartilage to cause electrolytic conduction
4 of current through the cartilage for a predetermined application time while mechanically
5 maintaining the predetermined desired shape; and
6 means for ceasing the application of electrolytic conduction of current through the
7 cartilage and freeing the cartilage from mechanical shaping.

1 64. The apparatus of claim 63 where the means for applying electrical energy is
2 limited to provide a substantially nonthermal current.

1 65. The apparatus of claim 63 where the means for applying electrical energy to
2 cartilage causes cartilage shaping to occur through electroplating.

1 66. The apparatus of claim 63 where the means for applying electrical energy to
2 cartilage causes cartilage shaping to occur through electrophoresis.

1 67. The apparatus of claim 63 where the means for applying electrical energy to
2 cartilage causes cartilage shaping to occur through protein denaturation.

1 68. The apparatus of claim 63 where the means for applying electrical energy to
2 cartilage causes cartilage shaping to occur through a combination of electroplating,
3 electrophoresis, and/or protein denaturation.

1 69. The apparatus of claim 63 where the means for applying electrical energy to
2 cartilage is by means of a DC voltage being applied across a pair of electrodes, which
3 causes cartilage shaping to occur through molecular dissociation of the components of
4 the cartilage in the vicinity of the electrodes which in turn induces volumetric molecular
5 reorganization within the tissue.

1 70. An apparatus of electroforming tissue comprising:
2 at least one electrode to couple a DC current or electric field into the tissue to
3 change shape of the tissue or to change material parameters of the tissue; and
4 a mechanical instrument to apply stress to the tissue while the electrode couples
5 current into the tissue, or to carry the at least one electrode while it couples current to
6 the tissue to change material parameters of the tissue.

1 71. The apparatus of claim 70 where the apparatus is ambulatory to allow treatment
2 over an extend period of time.

1 72. The apparatus of claim 70 where the tissue is cartilage anatomically positioned in
2 the ear, nose or throat.

1 73. The apparatus of claim 70 where the electrode is in the form of a sheet, or a
2 plurality of dots, wires, strips, or needles.